Approximating Surface Matrix Band for Dentist to Use for Patients

Project Page

Date: September 28th, 2025 - October 1st, 2025

Client: Dr. Donald Tipple
Advisor: Prof. Beth Meyerand
Team:

Roshan Patel - rgpatel3@wisc.edu (Team Leader)

Keleous Lange - krlange@wisc.edu (Communicator & Co-BPAG)

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Joseph Koch - jmkoch7@wisc.edu (BSAC)

Problem statement

Surface matrix bands are devices used by dentists to separate adjacent teeth during restorations of interproximal cavities (cavities found in-between two teeth). The matrix band serves to support the restoration material, to provide shape and contour to the tooth being restored, and to protect the adjacent tooth. Ideally, the width of the space between the two adjacent teeth is just large enough to fit one matrix band in order to ensure close proximal contact area, which prevents food impaction and decay. In the case of two cavities on two adjacent teeth, this process is tedious, as the dentist must complete the process from start to finish for each adjacent tooth individually. The goal of this project is to create a dental matrix band that effectively partitions adjacent teeth for more efficient tooth restoration procedures on interproximal cavities by making it possible to complete two adjacent restorations simultaneously.

Brief status update

The team is giving their preliminary presentation this week. Using the feedback received from the presentation as well as the design matrix, the team will begin looking into the feasibility of manufacturing our idea.

Summary of weekly team member design accomplishments

- Roshan Patel
    - Worked on the design matrix
    - Worked on preliminary presentation
    - Practiced presenting with group
- Keleous Lange
    - Worked on design matrix
    - Worked on preliminary presentation
    - Practiced presenting with group
- Tanya Predko
    - Worked on the design matrix
    - Completed assigned portions of the preliminary presentation
    - Conducted research on prevalence of caries for background purposes
    - Picked up supplies from the client
- Joseph Koch
    - Worked on the design matrix
    - Worked on preliminary presentation
    - Practiced presenting with group

Difficulties / advice requests

There are no difficulties at this time.

Current design

N/A

Materials and expenses

Item	Description	Manufac-turer	Mft Pt#	Vendor	Vendor Cat#	Date	#	Cost Each	Total	Link
Category 1										
									$0.00	
									$0.00	
Category 2										
									$0.00	
									$0.00	

								TOTAL:	**$0.00**	

Major team goals for the next week

1. Work on preliminary report
2. Submit the Design Matrix
3. Schedule design consultation for winning design idea
4. Work on modeling and material acquisition for the design
5. Revise design idea as necessary

Next week's individual goals

- Roshan Patel
    - Do more background research on design manufacturing
    - Look at online vendors for material acquisition
    - Work on preliminary report
- Keleous Lange
    - Look into fabrication of the matrices
    - Discuss testing protocols
    - Determine feasibility of filling mold cavity
- Tanya Predko
    - Work with the team to determine fabrication methods
    - Complete assigned sections of the preliminary report
    - Submit the Design Matrix
- Joseph Koch
    - Work with the team to determine fabrication methods
    - Complete assigned sections of the preliminary report
    - Submit the Design Matrix

Timeline

Task	September				October				November					December	
	6	13	20	27	4	11	18	25	1	8	15	22	29	6	13
Project R&D															
Empathize	X														
Background…															
Prototyping															

Testings															
Deliverables															
Progress Reports	X														
Prelim presentation															
Final Poster															
Meetings															
Client															
Advisor	X														
Website															
Update	X														

Filled boxes = projected timeline
X = task was worked on or completed

Previous week's goals and accomplishments

- Completed the Design matrix
- Completed the preliminary presentation

Activities

Name	Date	Activity	Time (h)	Week Total (h)	Sem. Total (h)
Roshan Patel	10/1/2025	- Worked on the decision matrix - Created and practiced the preliminary presentation	1 3	4	15
Keleous Lange	10/1/2025	- Worked on the decision matrix - Created and practiced the preliminary presentation	1 3	4	13
Tanya Predko	10/1/2025	- Worked on the design matrix - Created and practiced the preliminary presentation - Picked up supplies from the client - Background research	1 3 0.5 1	5.5	16.5
Joseph Koch	10/1/2025	- Worked on the decision matrix - Created and practiced the preliminary presentation	1 3	4	13